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- Handwritten: E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E13, E14, E15, E16, E17, E18, E19, E20, E21, E22, E23, E24, E25, E26, E27, E28, E29, E30, E31, E32, E33, E34, E35, E36, E37, E38, E39, E40, E41, E42, E43, E44, E45, E46, E47, E48, E49, E50, E51, E52, E53, E54, E55, E56, E57, E58, E59, E60, E61, E62, E63, E64, E65, E66, E67, E68, E69, E70, E71, E72, E73, E74, E75, E76, E77, E78, E79, E80, E81, E82, E83, E84, E85, E86, E87, E88, E89, E90, E91, E92, E93, E94, E95, E96, E97, E98, E99, E100
- (a) a polynucleotide encoding a TbpA polypeptide of *P. haemolytica* comprising an amino acid sequence as set forth in SEQ ID NO:2;
 - (b) a polynucleotide encoding a TbpA polypeptide of *P. haemolytica* comprising amino acid 1 to amino acid 930 as set forth in SEQ ID NO:2;
 - (c) a polynucleotide encoding a TbpA polypeptide of *P. haemolytica* comprising amino acid 29 to amino acid 930 as set forth in SEQ ID NO:2; and
 - (d) a polynucleotide which is complementary to the polynucleotide of (a), (b) or (c),
wherein said stringent conditions include a post hybridization wash of 2X SSC (sodium chloride/sodium citrate) at 50°C.

43. (Twice Amended) An isolated and purified nucleic acid molecule comprising the polynucleotide of claim 30, wherein said nucleic acid molecule is produced by a process comprising the steps of:

- (a) screening a genomic DNA library using as a probe a target sequence defined by the SEQ ID NO: 1, or fragments thereof;
- (b) identifying members of said library which contain sequences that hybridize to said target sequence; and
- (c) isolating an intact coding sequence from one or more of said members identified in step (b).

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154. (Twice Amended) An isolated and purified DNA molecule comprising the polynucleotide of claim 30, wherein said polynucleotide is produced by a process comprising the steps of:

- (a) isolating mRNA, DNA, or cDNA produced from a *P. haemolytica* organism;
- (b) amplifying nucleic acid molecules whose nucleotide sequence is homologous to amplification primers derived from said fragment of said *P. haemolytica* genome to prime said amplification;
- (c) isolating said amplified sequences produced in step (b).

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